

CLAIMS

What is claimed is:

- 1 1. A method of automating the provisioning of network services for customer premises
2 equipment of a subscriber in a next generation digital telecommunications network,
3 the method comprising the steps of:
4 receiving a service request from a network service provider that specifies a service to
5 be provided to the customer premises equipment;
6 retrieving a configuration template for a configuration appropriate for the customer
7 premises equipment;
8 allocating and reserving at least one resource associated with the customer premises
9 equipment;
10 generating configuration data for the customer premises equipment based on the
11 configuration template and stored system configuration information;
12 delivering the configuration data over the network to the customer premises
13 equipment to result in provisioning the customer premises equipment to
14 provide the service.
- 1 2. A method as recited in Claim 1, wherein the customer premises equipment is an
2 ADSL router, wherein the network is an asynchronous transfer mode (ATM) network,
3 and wherein the step of generating configuration data includes the step of allocating
4 and reserving an IP address and fully-qualified domain name for each of a plurality of
5 permanent virtual circuits associated with communications among the network and
6 the router.
- 1 3. A method as recited in Claim 1, wherein the configuration service request comprises
2 information uniquely identifying the customer premises equipment, information
3 identifying one or more permanent virtual circuits assigned by the service provider to
4 the customer premises equipment; and access control data.

1 4. A method as recited in Claim 1, wherein the customer premises equipment is an
2 ADSL router, wherein the network is an asynchronous transfer mode (ATM) network,
3 and wherein the step of delivering the configuration data comprises the steps of
4 storing the configuration data in a file server that is communicatively coupled to the
5 network and delivering the configuration data from the file server to the ADSL router
6 using file transfer protocol.

1 5. A method as recited in Claim 1, wherein the customer premises equipment is an T1
2 CPE device, wherein the network is an asynchronous transfer mode (ATM) network,
3 and wherein the step of delivering the configuration data comprises the steps of pre-
4 staging the configuration data in a file server that is communicatively coupled to the
5 network and delivering the configuration data from the file server to the T1 CPE
6 device using telnet.

1 6. A method as recited in Claim 1, wherein the step of generating configuration data
2 includes the steps of:
3 allocating and reserving one or more network addresses respectively associated with
4 one or more communication channels between the network and the customer
5 premises equipment by communicating with a dynamic host control protocol
6 (DHCP) server;
7 allocating and reserving one or more fully qualified domain names respectively
8 associated with one or more communication channels between the network
9 and the customer premises equipment by communicating with a domain name
10 service (DNS) server.

1 7. A method as recited in Claim 1, further comprising the steps of:
2 creating and storing updated configuration data in response to receiving a request to
3 update provisioning of the customer premises equipment;
4 generating a request to a proxy element of a network access device to update the
5 provisioning to the customer premises equipment.

1 8. A method as recited in Claim 1, further comprising the steps of:
2 creating and storing updated configuration data in response to receiving a request to
3 update provisioning of the customer premises equipment;
4 delivering the updated configuration data to the customer premises equipment;
5 applying the updated configuration data as a merge to an existing configuration of the
6 customer premises equipment, to result in creating a merged configuration;
7 saving the merged configuration as a start-up configuration for the customer premises
8 equipment.

1 9. A method as recited in Claim 1, further comprising the steps of:
2 receiving information indicating that access is provisioned for a subscriber associated
3 with the customer premises equipment and that one or more permanent virtual
4 circuits are established in network elements of the network for facilitating the
5 access;
6 allocating and reserving network addresses for a voice signaling channel and a bearer
7 channel associated with communications between the customer premises
8 equipment and the network;
9 updating a domain name service server with information that associates the allocated
10 and reserved network addresses with the customer premises equipment;
11 creating and storing one or more mappings for the permanent virtual circuits in a
12 switch device that directs network communications to the customer premises
13 equipment.

1 10. A method as recited in Claim 1, further comprising the steps of:
2 retrieving system configuration data from one or more sub-networks that contain the
3 customer premises equipment;
4 allocating network addresses for a signaling channel and a bearer channel associated
5 with the customer premises equipment;
6 updating a DNS server with mappings of the network addresses and corresponding
7 fully-qualified domain names.

1 11. A method as recited in Claim 1, wherein the steps of retrieving a configuration
2 template for a configuration appropriate for the customer premises equipment include
3 the steps of:
4 extracting a device type and service type from the service request;
5 searching a template registry table for the template based on the device type and
6 service type;
7 if a template associated with the device type and service type is not found in the
8 template registry table, selecting and using a default configuration template.

1 12. A computer-readable medium carrying one or more sequences of instructions for
2 automatically provisioning network service for customer premises equipment of a
3 subscriber in a next generation digital telecommunications network, which
4 instructions, when executed by one or more processors, cause the one or more
5 processors to carry out the steps of:
6 receiving a service request from a network service provider that specifies a service to
7 be provided to the customer premises equipment;
8 retrieving a configuration template for a configuration appropriate for the customer
9 premises equipment;
10 allocating and reserving at least one resource associated with the customer premises
11 equipment;
12 generating configuration data for the customer premises equipment based on the
13 configuration template and stored system configuration information;
14 delivering the configuration data over the network to the customer premises
15 equipment to result in provisioning the customer premises equipment to
16 provide the service.
17

1 13. An apparatus for automatically provisioning network service for customer premises
2 equipment of a subscriber in a next generation digital telecommunications network,
3 comprising:
4 means for receiving a service request from a network service provider that specifies a
5 service to be provided to the customer premises equipment;
6 means for retrieving a configuration template for a configuration appropriate for the
7 customer premises equipment;
8 means for allocating and reserving at least one resource associated with the customer
9 premises equipment;
10 means for generating configuration data for the customer premises equipment based
11 on the configuration template and stored system configuration information;
12 means for delivering the configuration data over the network to the customer premises
13 equipment to result in provisioning the customer premises equipment to
14 provide the service.

1 14. An apparatus for automatically provisioning network service for customer premises
2 equipment of a subscriber in a next generation digital telecommunications network,
3 comprising:
4 a processor;
5 a network interface communicatively coupled between the processor and the network
6 and configured to communicate data among the processor and the network;
7 a computer-readable medium comprising one or more sequences of instructions
8 which, when executed by the processor, cause the processor to carry out the
9 steps of:
10 receiving a service request from a network service provider that specifies a
11 service to be provided to the customer premises equipment;
12 retrieving a configuration template for a configuration appropriate for the
13 customer premises equipment;
14 allocating and reserving at least one resource associated with the customer
15 premises equipment;

- 1 17. An apparatus as recited in Claim 15, further comprising an inventory manager that is
2 communicatively coupled to the provisioning engine and to an inventory repository
3 that comprises network element inventory information, and wherein the means for
4 generating configuration data includes means for generating the configuration data
5 based on the network element inventory information.
- 1 18. An apparatus as recited in Claim 15, wherein the customer premises equipment is an
2 ADSL router, wherein the network is an asynchronous transfer mode (ATM) network,
3 and wherein means for generating configuration data includes means for allocating
4 and reserving an IP address and fully-qualified domain name for each of a plurality of
5 permanent virtual circuits associated with communications among the network and
6 the router.
- 1 19. An apparatus as recited in Claim 15, wherein the configuration service request
2 comprises information uniquely identifying the customer premises equipment,
3 information identifying one or more permanent virtual circuits assigned by the service
4 provider to the customer premises equipment; and access control data.
- 1 20. An apparatus as recited in Claim 15, wherein the customer premises equipment is an
2 ADSL router, wherein the network is an asynchronous transfer mode (ATM) network,
3 and wherein means for delivering the configuration data comprises means for storing
4 the configuration data in a file server that is communicatively coupled to the network
5 and delivering the configuration data from the file server to the ADSL router using
6 file transfer protocol.